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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/630,751  | 07/31/2003  | Kenji Shimizu        | Q71391              | 9957             |
| 7590  | 11/29/2005  |                      | EXAMINER            |                  |
| SUGHRUE MION, PLLC<br>2100 Pennsylvania Avenue, N.W.<br>Washington, DC 20037-3213 |             |                      | RICKMAN, HOLLY C    |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1773                |                  |

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/630,751             | SHIMIZU ET AL.      |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Holly Rickman          | 1773                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 19 September 2005.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,4-9 and 11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1,4-9 and 11 is/are rejected.

7) Claim(s) 2-3,10,12 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/19/05 has been entered.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyasu et al. (US 6670055) in view of Chang et al. (US 6777066).

Tomiyasu et al. disclose a magnetic recording medium having a non-magnetic substrate, a CrMnC non-magnetic layer, a CoPt-alloy magnetic layer directly thereon and a protective overcoat. The CrMnC layer corresponds to the claimed “orientation control layer” because it necessarily controls the orientation of the magnetic layer that is epitaxially grown thereon. The reference teaches that the recording medium can be perpendicular. See Figure 1; col. 6, lines 28-38 and lines 49-50; col. 11, lines. In addition, it is noted that the reference discloses an example

having a CrMnC nonmagnetic layer between magnetic layers wherein the thickness of the CrMnC layer is 3 nm (col. 11, lines 10-46).

Tomiyasu et al. is silent with respect to the claimed “soft magnetic under-film” and the use of a monopole head.

Chang et al. teach the it is well known in the art to use a soft magnetic underlayer disposed on a substrate in a perpendicular magnetic recording medium for the purpose of guiding magnetic flux emanating from the magnetic head (col. 1, lines 35-51). The reference also teaches that it is well known in the art that single-pole magnetic heads allow for high linear recording densities to be achieved when used with perpendicular recording media (col. 1, lines 32-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a soft magnetic layer on top of the substrate taught by Tomiyasu et al. in order to improve thermal stability of the medium by guiding stray flux emanating from the magnetic head as suggested by Chang et al. Furthermore, it would have been obvious to use a single-pole magnetic head in conjunction with the recording medium taught by Tomiyasu et al. in order to achieve high linear recording density.

#### *Response to Arguments*

4. Applicant's arguments filed 1/3/05 have been fully considered but they are not persuasive.

Applicant argues that the upper pre-coat layer taught by Tomiyasu et al. is not in direct contact with a perpendicular magnetic recording film as now required by the claims. The

examiner agrees that the CrC containing pre-coat layer taught by Tomiyasu et al. does not disclose the invention as set forth in the claims amended 7/18/05. However, Tomiyasu et al. teaches the use of a second CrC containing layer which is in direct contact with an overlying magnetic layer. For this reason, the rejection of record has been maintained with respect to claims 1, 4-9, and 11.

***Allowable Subject Matter***

5. Claims 2-3, 10, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art to Tomiyasu et al. fails to teach or suggest a magnetic recording medium having a CrC containing orientation control layer directly in contact with an overlying perpendicular magnetic recording layer wherein the CrC layer includes C in the claimed amounts. The prior art fails to teach or suggest a motivation to optimize the amount of C present in the CrMnC layer disclosed as being directly beneath a magnetic recording layer.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman  
Primary Examiner  
Art Unit 1773